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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/763,394	07/02/2001	Shinichi Sugihara	564131/0016	5266

7590 04/28/2003

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New York, NY 10038

EXAMINER

JOHNSON, EDWARD M

ART UNIT	PAPER NUMBER
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1754

DATE MAILED: 04/28/2003

Please, find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/763,394

Applicant(s)

SUGIHARA, SHINICHI

Examiner

Edward M. Johnson

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 24 March 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 40-48 and 50-87 is/are pending in the application.
- 4a) Of the above claim(s) 74-87 is/are withdrawn from consideration.
- 5) ☒ Claim(s) 40-46, 50-56, 59, 60, 62, 63, 65-67 and 70-73 is/are allowed.
- 6) ☒ Claim(s) 47, 48, 57, 58, 61, 64, 68 and 69 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on _____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____
- 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless -

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

2. Claims 47-48 are rejected under 35 U.S.C. 102(e) as being anticipated by Mouri et al. 5,872,072.

Regarding claim 47 Mouri '072 discloses catalytic compositions comprising titanium oxide (see abstract), as semiconductors (abstract; semiconductors have stable oxygen defects) exhibiting NO_x reduction (see column 13, lines 43-44), and having activity under ultraviolet, sunlight, and fluorescent lamp wavelengths (see column 12, lines 1-11). The ESR measurements are considered to be inherent properties of titanium dioxide because the same stable compound comprising the same elements of the Periodic Table is disclosed.

Regarding claim 48, Mouri '072 discloses catalytic compositions comprising titanium oxide (see abstract), as semiconductors (abstract; semiconductors have stable oxygen

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defects) exhibiting NOx reduction (see column 13, lines 43-44), and having activity under ultraviolet, sunlight, and fluorescent lamp wavelengths (see column 12, lines 1-11). The ESR measurements are considered to be inherent properties of titanium dioxide because the same stable compound comprising the same elements of the Periodic Table is disclosed.

Claim Rejections - 35 USC § 103

3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

4. Claims 57-58, 61, 64, and 68-69 are rejected under 35 U.S.C. 103(a) as being unpatentable over Phillips 5,989,648 in view of Mouri '072.

Regarding claim 57 Phillips '648 discloses a method of producing titanium oxide catalytic materials (see abstract and column 1, lines 43-44) comprising activating with hydrogen and argon plasma (see column 1, lines 54-56, column 2, lines 60-64 and column 4, line 62-64), and operation at 1 Torr (see column

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4, lines 36-37; substantially free from air compared to a volume at atmospheric pressure).

Phillips '648 fails to disclose a semiconductor.

Mouri '072 discloses a semiconductor.

It is considered that it would have been obvious to one of ordinary skill in the art at the time the invention was made to use the semiconductor of Mouri in the titanium dioxide catalyst making process of Phillips because Mouri discloses semiconductor in the form of titanium dioxide (see abstract, column 3, lines 41-43, and column 5, lines 42 and 50-59) for efficient removal of malodorous components with or without light irradiations (see column 3, lines 25-27, 42, and 52-53).

Regarding claim 58, Phillips '648 discloses titania (see column 4, lines 20-21).

Regarding claim 61, Phillips '648 discloses discloses operation at 1 Torr (see column 4, lines 36-37) and temperatures on the order of 3000 K (see column 5, lines 15-18).

Regarding claim 64, Phillips '648 discloses a method of producing titanium oxide catalytic materials (see abstract and column 1, lines 43-44) comprising activating with hydrogen and argon plasma (see column 1, lines 54-56, column 2, lines 60-64 and column 4, line 62-64), and operation at 1 Torr (see column

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4, lines 36-37; substantially free from air compared to a volume at atmospheric pressure). Mouri '072 discloses a semiconductor.

Regarding claims 68-69, Phillips '648 discloses reduction (see column 1, lines 55-56).

Allowable Subject Matter

5. Claims 40-46, 50-56, 59-60, 62-63, 65-67, and 70-73 are allowed.

6. The following is a statement of reasons for the indication of allowable subject matter: It would not have been obvious to one of ordinary skill in the art at the time the invention was made to make the peak area ratio of 1.99 or lower in the process of the instant claims 40, 44, 50, 53, and 56.

Response to Arguments

7. Applicant's arguments filed 3/24/03 have been fully considered but they are not persuasive.

It is argued that as mentioned above, Mouri '072 fails to teach that the titanium oxide exhibits... 1.99 or lower. This is not persuasive because the limitation is not recited in the rejected claims. It is noted that the features upon which applicant relies (i.e., the peak area ratio of 1.99 or lower) are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from

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the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

Further, it is again noted that the Examiner's position is that stable oxygen defects are an inherent characteristic of the prior art semiconductors. Applicant does not appear to argue that the cited prior art would be devoid of stable oxygen defects, arguing only that this inherent feature is not disclosed. For Applicant's benefit, further information to that effect has been attached. See for example, Sonoda '080 (1981) column 1, second paragraph, "As is known, it is possible to lower the resistivity of an n-type metal oxide semiconductor... to increase oxygen defects of the metal oxide utilizing the n-type characteristic of the oxide."

Conclusion

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. JP 03013854 A discloses a titanium dioxide NOx gas detection element with oxygen defects (see abstract); Lelenthal et al. US 6,168,911 B1 discloses titanium dioxide having oxygen defects (see column 4, lines 12-17 and claim 21).

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Edward M.

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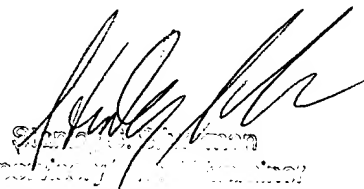
Johnson whose telephone number is 703-305-0216. The examiner can normally be reached on M-F 6:30-4:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stanley S. Silverman can be reached on 703-308-3837. The fax phone numbers for the organization where this application or proceeding is assigned are 703-872-9310 for regular communications and 703-872-9311 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-308-0661.

EMJ

April 21, 2003



STANLEY S. SILVERMAN
Supervisor
Art Unit 1754
Telephone: 703-308-3837